

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
PERMITTING and COMPLIANCE DIVISION  
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM  
(MPDES)**

**Statement of Basis**

Permittee:	City of Whitefish
Permit No.:	MT0030414
Receiving Water:	Unnamed reservoir in an unnamed tributary to Whitefish Lake
Facility Information:	
Name	City of Whitefish Water Treatment Plant
Location	300 Reservoir Road Whitefish, MT 59937
Facility Contact:	Greg Acton, Utility Supervisor P.O. Box 158 Whitefish, MT 59937 406-863-2451
Fee Information:	
Number of Outfalls	1 - (for fee determination)
Outfall – Type	001 - Process Water

## I. Permit Status

The Montana Pollutant Discharge Elimination System (MPDES) permit for the City of Whitefish Water Treatment Plant was issued on April 1, 1999 and expired on November 30, 2003. In May of 2003, a notification and invoice for the renewal of the permit were sent to the permittee. In March 2005, the City of Whitefish submitted renewal application forms EPA-1 and 2A at the Department's request, as no application was available in the administrative file. The fee was submitted in April 2005 with the explanation that the original warrant issued by the City was not cashed by the State. The application was deemed complete in June 2005.

## II. Facility Information

### A. Facility Description

The City of Whitefish Water Treatment Plant (WTP) is a publicly-owned treatment works under the 1987 Office of Management and Budget Standard Industrial Classification Code 4941, "Water Supply". The production of potable water utilizes raw water screening, primary coagulation after polymer addition, contact adsorption clarification (CAC), filtration, and pre- and post-chlorination with sulfur dioxide dechlorination for the treatment of water from the Haskill Creek Reservoir or Whitefish Lake sources. The facility is designed to produce six million gallons per day (mgd) of treated potable water at full capacity. Cationic polymer is used in the treatment process.

Based on the filtrate turbidity, number of hours of use, and head loss across each filter, filters are backwashed for approximately 10 minute washes with raw water and air scour. Wastewater is dechlorinated and treated by settling in the nine foot deep, 20 foot by 100 foot concrete settling basin. Batch discharge at Outfall 001 is to the unnamed 1907-built municipal water reservoir in the unnamed, historically perennial drainage to Whitefish Lake.

For the original 1999 permit, the engineer projected filter run times of 48 hours and 0.070 mgd discharge volume from CAC backwashes, filter-to-waste, and filter backwash wastewaters. Current batch discharge flows average 0.012 mgd over approximately 125 separate days each year. Discharge flow is measured using volumetric measurements with a staff gauge averaged over the duration of the discharge in days.

### B. Effluent Characteristics

Table 1 summarizes monthly self-monitoring effluent data reported by the City of Whitefish WTP during the period of record (POR) March 2002 through January 2007.

**Table 1. DMR Effluent Characteristics for POR**

Parameter	Location	Units	Previous Permit Limit	Minimum Value	Maximum Value	Average Value	Number of Samples
Flow	Effluent	mgd	<sup>(1)</sup>	0.006	0.291	0.120	56
Dissolved Aluminum	Effluent	mg/L	0.75 <sup>(2)</sup>	0.02	0.40	0.08	56
		lb/day	0.04 <sup>(3)</sup>	0.002	0.033	0.008	56
Turbidity	Upstream	NTU	<sup>(1)</sup>	0.65	6.53	0.97	56
Turbidity	Effluent	NTU	<sup>(1)</sup>	0.31	0.90	0.58	56
Net Turbidity	NA	NTU	≤0	-0.01	-0.28	-0.16	56
Total Residual Chlorine	Effluent	mg/L	0.019 <sup>(2)</sup>	0	0.01	0.006	56
Footnotes: NA means Not Applicable (1) No limit in previous permit; monitoring requirement only. (2) Instantaneous Maximum. (3) Nondegradation Load Allocation.							

### C. Compliance History

The Department issued a violation letter on January 5, 2007, for: 1) failure to maintain permit required records of monitoring information, 2) failure to use and/or follow analytical test procedures approved under Part 136, Title 40 of the Code of Federal Regulations, and 3) failure to develop, implement, and follow adequate laboratory controls and appropriate quality assurance procedures. In March 2007, the permittee submitted a written response indicating these violations have been resolved.

## III. Rationale for Proposed Technology-Based Effluent Limits (TBELs)

### A. Scope and Authority

The Montana Board of Environmental Review (BER) has adopted performance standards for point source discharges to state waters under Title 17, Chapter 30, Subchapter 12 of the Administrative Rules of Montana (ARM). The BER has adopted by reference 40 CFR Subpart N which is a series of federal agency rules that adopt Technology-Based Effluent Limits (TBEL) for existing sources and performance standards for new sources [ARM 17.30.1207(1)]. National Effluent Limit Guidelines (ELG) have not been promulgated under Subchapter N for filter backwash wastewater at potable water treatment plants (WTP).

In addition to Subchapter 12, the BER has adopted general treatment requirements that establish the degree of wastewater treatment required to maintain and restore the quality of state surface waters. This rule states that in addition to federal ELGs, the degree of wastewater treatment is based on the surface water quality standards; the state's nondegradation policy; the quality and flow of the receiving water; the quantity and quality of sewage, industrial wastes and other wastes to be treated; and the presence or absence of

other sources of pollution on the watershed [ARM 17.30.635(1)]. Also, ARM 17.30.635(3) states industrial waste must receive, as a minimum, treatment equivalent to the best practicable control technology currently available (BPCTCA) as defined in 40 CFR Chapter 1, Subchapter N (July 1, 1991).

Technology-based pH limits are in the previous permit and will be continued with this permit cycle. It is not necessary to implement the TSS limitations as TSS will be controlled by the water quality-based effluent limitation for turbidity (see Section IV. 4. of this Statement of Basis).

#### B. Mass-Based Limitations

ARM 17.30.1345(8) requires that all effluent limits be expressed in terms of mass. There are no newly proposed limitations requiring the calculation of mass-based limitations

#### C. Proposed TBELs for Outfall 001

Effluent pH shall remain between 6.0 and 9.0 standard units. For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

#### D. Nondegradation Load Allocations

The provisions of ARM 17.30.701 - 718 (Nondegradation of Water Quality) apply to new or increased sources of pollution [ARM 17.30.702(18)]. Sources that are in compliance with the conditions of their permit and do not exceed the limits established in the permit or determined from a permit issued by the Department prior to April 29, 1993 are not considered new or increased sources.

A nondegradation load allocation for dissolved aluminum in the Whitefish WTP discharge was calculated as part of the permit issuance in 1999, based on the design flow of 0.070 mgd and the proposed permit limitation for aluminum. The nondegradation load allocations and the actual average annual loads discharged from the facility are presented below. Actual loads for dissolved aluminum were obtained from the facility DMRs. The period of record (POR) is March 2002 through January 2007. These data indicate that the facility did not exceed the nondegradation load values. The Whitefish WTP discharge is not a new or increased source for the purposes of nondegradation.

**Table 2. Nondegradation and Actual Loads for POR**

Nondegradation Allocated Load Limits			Actual 30-Day Average Load				
Parameter	Units	Annual Average Load	2002	2003	2004	2005	2006
Dissolved Aluminum	lb/day	0.4	0.007	0.007	0.006	0.006	0.11

#### IV. Rationale for Proposed Water Quality-Based Effluent Limits (WQBELs)

##### A. Scope and Authority

Permits are required to include WQBELs when TBELs are not adequate to protect state water quality (ARM 17.30.1344 and 40 CFR 122.44). ARM 17.30.637(2) states that no wastes may be discharged that can reasonably be expected to violate any state water quality standard. Montana water quality standards (ARM 17.30.601, *et seq.*) define both water use classifications for all state waters and numeric and narrative standards that protect those designated uses. New sources or increased sources, as defined in ARM 17.30.703(16), are subject to Montana Nondegradation Policy [75-5-303, Montana Code Annotated (MCA)] and regulations (ARM 17.30.701, *et seq.*).

##### B. Receiving Water

The initial permit in 1999 identified the receiving water as an unnamed lake that is a tributary to Whitefish Lake. The actual receiving water is better described as the original 1907-built, municipal water reservoir in the drainage below the WTP source water, Haskill Creek Reservoir (see Figure 1). According to the design engineers (Design Report, Carver Engineering, August 1998), when the stream leaves the old reservoir it flows for approximately 300 feet where it infiltrates or dries up. The stream picks up again after about 100 feet and flows approximately  $\frac{3}{4}$  of a mile through the Nature Conservancy swampland to Monks Bay in Whitefish Lake. According to the permittee, the stream above the old reservoir can be dry for periods of time; flowing in response to runoff and precipitation events and the wasting of raw water from Haskill Creek Reservoir; whereas, the old reservoir appears to be recharged with groundwater.

The old reservoir and the unnamed tributary to Whitefish Lake are not identified waterbody segments on the 1996 or 2006 3030(d) lists of waterbodies in need of Total Maximum Daily Load (TMDL) development. Whitefish Lake, identified as segment MT76LJ011-1 (1996) and MT76P004\_010 (2006) is immediately downstream of this receiving water. The Lake and its tributaries are classified as A-1 waters according to the Surface Water Quality Standards and Procedures [ARM 17.30.608(1)(a)(iii)].

A-1 waters are to be maintained suitable for drinking, culinary, and food processing purposes after conventional treatment for removal of naturally present impurities [ARM 17.30.620(1)]. Water quality must be maintained suitable for bathing, swimming, and recreation: growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply [ARM 17.30.620(2)].

##### C. Applicable Water Quality Standards

Discharges to surface waters classified A-1 are subject to the specific water quality standards of ARM 17.30.622, Department Circular DEQ-7, as well as the general provision of ARM 17.30.635 through 637. In addition to these standards, dischargers are also subject to ARM

17.30 Subchapter 5 (Mixing Zones, November 2004) and Subchapter 7 (Nondegradation of Water Quality, June 2004).

D. Mixing Zone

The previous permit granted the permittee a source specific mixing zone in the old reservoir in accordance with ARM 17.3.518(3) at five percent of the lake surface area; an area defined as a semicircle extending 23 feet along the shore in either direction and 23 feet in radius from the point of discharge (see Figure 1). The mixing zone will remain as previously described in this permit cycle.

E. Basis and Proposed Water Quality-Based Effluent Limits

Pollutants typically present at potable water treatment plants that may cause or contribute to a violation of water quality standards include conventional pollutants such as TSS and pH, non-conventional pollutants such as turbidity, and toxics such as total residual chlorine and dissolved aluminum.

1. Conventional Pollutants

Total Suspended Solids (TSS) – There is to be no increase above naturally occurring suspended sediment in class A-1 waters [ARM 17.30.622(3)(d)]. The previous permit limitation on turbidity (no change above naturally occurring) is sufficient to assure the suspended solids do not exceed background concentrations. No additional WQBEL for TSS will be required for this parameter.

2. Non-conventional Pollutants

Turbidity – There is to be no increase above naturally occurring turbidity in class A-1 waters [ARM 17.30.622(3)(d)]. Net turbidity change (as measured by the upstream turbidity nephelometric turbidity units (NTU) minus the discharge turbidity NTU) must be less than or equal to zero in order to be in compliance.

For the receiving waters, mean upstream turbidity was reported to be 0.74 NTU. The discharge averaged 0.46 NTU. The net turbidity change averaged -0.28 NTU and the minimum net change was 0.05 NTU. When reporting turbidity values for waters in the 0 to 1.0 NTU range, Standard Methods for the Examination of Water and Wastewater (20<sup>th</sup> Ed.) Method 2130 B requires the reporting of turbidity readings to the nearest 0.05 NTU. The required reporting value for turbidity in Department Circular DEQ-7, Montana Numeric Water Quality Standards (February 2006) is 1 NTU. When reporting turbidity readings less than 1 NTU for upstream and discharge samples, report in increments of 0.05 NTU. For the purposes of net turbidity change, when upstream turbidity readings are less than 1 NTU any discharge sample result less than 1 NTU is considered to be in compliance with the limit.

### 3. Toxic Pollutants

Total Residual Chlorine (TRC) – The facility uses sulfur dioxide to dechlorinate prior to discharge. The previous permit limit of 0.019 mg/L instantaneous maximum will remain in effect during this permit cycle. The chronic standard of will be 0.011 mg/L will be the 30-day average limitation for this discharge.

Dissolved Aluminum – The previous permit limit of 0.75 mg/L instantaneous maximum in the mixing zone will remain in effect during this permit cycle. The chronic limitation of 0.087 mg/L cannot be exceeded beyond the mixing zone. The mass-based limitation of 0.4 lb/day instantaneous maximum has been continued for this discharge.

## V. Proposed Final Effluent Limits

### Outfall 001

Parameter	Units	Average Monthly Limit <sup>(1)</sup>	Average Weekly Limit <sup>(1)</sup>	Instantaneous Maximum Limit <sup>(1)</sup>
Dissolved Aluminum	mg/L	NA	NA	0.75
	lb/day	NA	NA	0.4
Net Turbidity Change <sup>(2)</sup>	NTU	NA	NA	≤ 0 <sup>(2)</sup>
Total Residual Chlorine	mg/L	0.011	NA	0.019
Footnotes: NA - Not Applicable				
(1) See Definition section at end of permit for explanation of terms.				
(2) As measured by upstream turbidity NTU minus discharge turbidity NTU. When reporting turbidity readings less than 1 NTU for upstream and discharge samples, report in increments of 0.05 NTU. For the purposes of net turbidity change, when upstream turbidity readings are less than 1 NTU, any discharge sample result less than 1 NTU is considered to be in compliance with the limit.				

Effluent pH shall remain between 6.0 and 9.0. For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no discharge which causes visible oil sheen in the receiving water.

## VI. Monitoring Requirements

### Outfall 001

Self-monitoring of effluent discharged at Outfall 001 shall be conducted at the discharge structure and samples will reflect the volume and nature of the discharge.

<b>Monitoring Requirements</b>				
<b>Parameter</b>	<b>Unit</b>	<b>Monitoring Location</b>	<b>Frequency of Analyses</b>	<b>Sample Type <sup>(1)</sup></b>
Flow	mgd	Effluent	1/Day	Calculated <sup>(2)</sup>
Duration	days	NA	NA	Reported
pH	s.u.	Effluent	1/Day	Instantaneous
Dissolved Aluminum	mg/L	Effluent	1/Week	Grab
	lb/day	Effluent	1/Month	Calculated
Turbidity <sup>(3)</sup>	NTU	Upstream	1/Day	Grab
Turbidity <sup>(3)</sup>	NTU	Effluent	1/Day	Grab
Net Turbidity Change <sup>(4)</sup>	NTU	NA	1/Day	Calculated
Total Residual Chlorine	mg/L	Effluent	1/Day	Grab
Footnotes: (1) See Definition section at end of permit for explanation of terms. (2) As measured using volume calculation and staff gauge averaged over duration of discharge. (3) When reporting turbidity readings less than 1 NTU for upstream and discharge samples, report in increments of 0.05 NTU. (4) As measured by upstream turbidity NTU minus discharge turbidity NTU. For the purposes of net turbidity change, when upstream turbidity readings are less than 1 NTU, any discharge sample result less than 1 NTU is considered to be in compliance with the limit.				

## VII. Nonsignificance Determination

The discharge from the Whitefish WTP does not constitute a new or increased source of pollutants pursuant to ARM 17.30.702(18).

## VIII. Other Information

On September 21, 2000, a U.S. District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new or increased permits under the MPDES program. The order was issued in the lawsuit Friends of the Wild Swan v. U.S. EPA, et al. (CV 97-35-M-DWM), District of Montana and



Missoula Division. The DEQ finds that renewal of this permit does not conflict with the order because there are no new or increased sources associated with the discharge.

X. Information Sources

1. Administrative Rules of Montana Title 17 Chapter 30 - Water Quality
  - a. Sub-Chapter 2 - Water Quality Permit and Application Fees, November 2003.
  - b. Sub-Chapter 5 - Mixing Zones in Surface and Ground Water, November 2004.
  - c. Sub-Chapter 6 - Montana Surface Water Quality Standards and Procedures, March 2006.
  - d. Sub-Chapter 7- Nondegradation of Water Quality, November 2004.
  - e. Sub-Chapter 10 - Montana Ground Water Pollution Control System, September 2004.
  - f. Sub-Chapter 11 - Storm Water Discharges, April 2004.
  - g. Sub-Chapter 12 - Montana Pollutant Discharge Elimination System (MPDES) Standards, March 2003.
  - h. Sub-Chapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Permits, March 2006.
2. Clean Water Act § 303(d), 33 USC 1313(d) Montana List of Waterbodies in Need of Total Maximum Daily Load Development, 1996 and 2006.
3. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387, October 18, 1972, as amended 1973-1983, 1987, 1988, 1990-1992, 1994, 1995 and 1996.
4. Montana Code Annotated Title 75 - Environmental Protection Chapter 5 - Water Quality, October 2002.
5. Montana Department of Environmental Quality Circular DEQ-2, Design Standards for Wastewater Facilities, September 1999.
6. Montana Department of Environmental Quality Circular DEQ-7, Montana Numeric Water Quality Standards, February 2006.
7. Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT0030414:
  - a. Administrative Record.
  - b. Renewal Application EPA Forms 1 and 2A, 2005.
8. Science Applications International Corporation (SAIC), *Model Permit Package-Water Supply Industry*. EPA Contract Number 68-01-7043, January 1987.
9. Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition, APHA, AWWA, WEF, 1998
10. US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136.

11. US Department of the Interior Geological Survey, Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2002, Scientific Investigations Report 2004-5266, 2004.
12. US EPA Technical Support Document for Water Quality-Based Toxics Control, EPA/505/2-30-001, March 1991.
13. US EPA NPDES Permit Writers' Manual, EPA 833-B-96-003, December 1996.
14. US EPA NPDES Permit Writers' Course Manual, EPA-833-B-91-001, April 2003.
15. Washington State NPDES General Permit for Water Treatment Plants –Permit Number WAG-64, Fact Sheet, June 2004.

Completed by MK Valett, May 8, 2007

Figure 1.

Flow Schematic for the City of Whitefish WTP Wastewater

